



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**FILE COPY**

*Receipt*  
41 CFR  
Lewis  
4/13/00

Applicant: Karl M. Robinson

Title: DEVICES HAVING IMPROVED CAPACITANCE AND METHODS OF THEIR FABRICATION

Docket No.: 303.455US3

Serial No.: 09/470,265

Filed: December 22, 1999

Due Date: N/A

Examiner: Unknown

Group Art Unit: 2811

Assistant Commissioner for Patents  
Washington, D.C. 20231

We are transmitting herewith the attached:

- ☒ Communication Re: Incorrect Filing Receipt (1 pg.)
- ☒ Copy of Filing Receipt (1 pg.)
- ☒ A return postcard.
- ☒ Copy of returned postcard and front page of application (2 pgs.)

RECEIVED  
APR 11 2000  
TC 2800 MAIL ROOM

No Additional fee is required.

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described above, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on this 20<sup>th</sup> day of March, 2000.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938, Minneapolis, MN 55402 (612-373-6900)

By: 

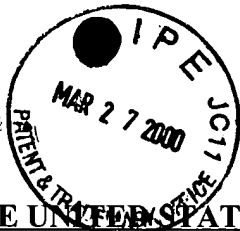
Name: Allen J. Oh

Reg. No. 42,047

AJO:CMG:clh

S/N 09/470,265

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Karl M. Robinson  
Serial No.: 09/470,265  
Filed: December 22, 1999  
Title: DEVICES HAVING IMPROVED CAPACITANCE AND METHODS OF THEIR FABRICATION

Examiner:  
Group Art Unit: 2811  
Docket: 303.455US3

COMMUNICATION RE: INCORRECT FILING RECEIPT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Applicants hereby request correction of the Filing Receipt with respect to the above-identified patent application. In the Filing Receipt received February 11, 2000, (copy enclosed), the title is incorrect. The filing receipt reads *TIO2 NONREFLECTING FILMS ON SOLAR CELLS*, it should read *DEVICES HAVING IMPROVED CAPACITANCE AND METHODS OF THEIR FABRICATION*, as evidenced by the returned postcard and the first page of the application (copy enclosed).

Applicant would appreciate the above-identified printing error be corrected and that a new "corrected" filing receipt be sent to Applicant's representatives at the address given below.

Respectfully submitted,

KARL M. ROBINSON

By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 373-6919

Date

March 20, 2000

By

[Signature]

Allen J. Oh  
Reg. No. 42,047  
AJO:CMG:clh

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231, on March 20, 2000.

Date of Deposit

Chris Hammond  
Chris Hammond

RECEIVED  
APR 11 2000  
JC 2800 MAIL ROOM



## DEVICES HAVING IMPROVED CAPACITANCE AND METHODS OF THEIR FABRICATION

### **Background**

Although there have been attempts to deposit metal oxides, such as  $\text{TiO}_2$  and  $\text{SrTiO}_3$ , during semiconductor fabrication, thermal oxidation of metals in the fabrication of capacitors has been limited since an initial oxide layer prohibits further diffusion during thermal oxidation. As a result the use of high dielectric constant oxidized metals has been limited in semiconductor capacitor fabrication. One such metal, titanium dioxide, has a dielectric constant 2-15 times greater than present semiconductor capacitor dielectrics such as silicon nitride, while titanates are 2-1000 times greater.

In the January 1996 issue of Material Research, Vol. 11, No. 1, an article entitled ELECTROCHEMICAL SYNTHESIS OF BARIUM TITANATE THIN FILMS, R.R. Bacsa et al. describes the synthesizing of polycrystalline films of barium titanate on titanium substrates by the galvanostatic anodization of titanium to form a material which has a dielectric constant of 200.

### **Summary of the Invention**

The invention includes new capacitor structures and dielectrics and methods for forming such capacitors and dielectrics.

In one exemplary embodiment the capacitor of the invention is formed by a process using only two deposition steps. The capacitor has first and second conductive plates and a dielectric is formed from the first conductive plate.

RECEIVED  
APR 11 2000  
TC 2800 MAIL ROOM



In re Patent Application of: Karl M. Robinson

Title: DEVICES HAVING IMPROVED CAPACITANCE AND METHODS OF THEIR FABRICATION

Attorney Docket No.: 303.455US3

Receipt is hereby acknowledged for the following in the United States Patent and Trademark Office:

DIV

**CONTENTS:** UTILITY PATENT APPLICATION (DIVISIONAL): Specification ( 25 pgs. including claims numbered 1 through 53 and a 1 page Abstract); Formal Drawing(s) ( 11 sheets); Copy of signed Combined Declaration and Power of Attorney ( 2 pgs) from prior application; Copy of Revocation and Power of Attorney from prior application ( 2 pgs.); Check in the amount of \$2,386.00 to pay the filing fee; Information Disclosure Statement ( 2 pgs); Form 1449 ( 1 pgs) , and copies of cited references ( 2 ); Preliminary Amendment ( 11 pgs); return postcard and transmittal sheet.

EXPRESS MAIL LABEL NO. EL505994395US

Mailed: December 22, 1999

AJO/tmp

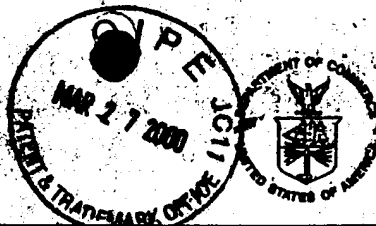
jc503 U.S. PTO  
09/470265



12/22/99

RECEIVED  
APR 11 2000  
TC 2800 MAIL ROOM

**FILING RECEIPT**



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY AND COMMISSIONER  
OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	FIG CL	INB CL
09/470,265	12/22/99	2811	\$2,386.00	303.455US3	11	67	13

021186  
SCHWEGMAN LUNDBERG WOESSNER & KLUTH  
P O BOX 2938  
MINNEAPOLIS MN 55402

N/A

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination, Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Missing Parts of Application" ("Missing Parts Notice") in this application, please submit any corrections to this Filing Receipt with your reply to the "Missing Parts Notice." When the PTO processes the reply to the "Missing Parts Notice," the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s) **KARL M ROBINSON, BOISE, ID**

CONTINUING DATA AS CLAIMED BY APPLICANT-

THIS APPLN IS A DIV OF 08/676,708 07/08/96

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 02/07/00

TITLE

TIO2 NONREFLECTING FILMS ON SOLAR CELLS

PRELIMINARY CLASS: 257

Schwegman, Lundberg  
Woessner & Kluth, PC

FEB 11 2000

RECEIVED

DATA ENTRY BY: HINES, BRENDA

TEAM 05 DATE 12/02/00